



The impact of El Niño-Southern Oscillation (ENSO) on rainfall in a warming world

Wednesday 24 October 2018, 2.30–3.30 pm (AEDT)

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Rainfall variability in the tropical Pacific caused by El Niño-Southern Oscillation (ENSO) is a major driver of climatic variability in Australia, as well as Asia, North and South America, Africa and over islands throughout the Indo-Pacific. Disruptions to rainfall patterns and intensity over the Pacific Ocean drives droughts, floods and changes severe weather that have major impacts on safety, health, livelihoods and ecosystems. It is therefore important to know how ENSO and the rainfall variability it causes will change in the future under a warming climate.

Current warming of our climate has already increased the risk of major disruptions to Pacific rainfall, and the frequency of such disruptions has been projected to increase over the 21st century in response to global warming.

Recent research shows that under a high emissions scenario (RCP8.5) ENSO-driven rainfall variability around the world is projected to increase by about 15-20% in the latter half of the 21st century, relative to the latter half of the 20th century. In most regions, the projected changes occur in conjunction with projected changes in long-term average conditions, which vary from region to region. In southern Australia for example, long-term average rainfall during winter under a high emissions scenario is projected to decline. This will cause El Niño years in the 21st century to be drier than they were during the 20th century. Both ENSO neutral and La Niña conditions will tend to produce less winter rain than they did during the 20th century.

While confidence in our ability to project changes in important aspects of ENSO has increased, climate models still display biases in simulations of ENSO and the tropical Pacific. Researchers in the Earth Systems and Climate Change Hub are working to improve climate models and therefore increase the accuracy of projections of future changes to ENSO and rainfall variability in Australia.

In this webinar, Dr Scott Power will discuss significant advances in our understanding of current and future ENSO and rainfall variability based on research undertaken within the ESCC Hub using numerous climate models from around the world.



Dr Scott Power, Dip. Ed. is a Senior Principal Research Scientist at the Bureau of Meteorology and an Honorary Professor in the Global Change Institute at the University of Queensland. He is an author of the Intergovernmental Panel on Climate Change Fifth Assessment Report (WGI-III Synthesis Report), and he has numerous publications in the international scientific literature on topics such as ENSO, Pacific climate and climate change. Scott is the former head of climate research and operational climate monitoring and prediction in the Bureau, and the former acting head of Australia's National Climate Centre. He has also been involved in international development aimed at improving climate services and Early Warning and Response Systems in developing Pacific Island nations for twenty years. Scott is a Deputy Chief Investigator in the Earth Systems and Climate Change Hub **Project 2.2: Enhancing Australia's capacity to manage climate variability and climate extremes in a changing climate.**

The Earth Systems and Climate Change Hub science webinars are open to the research community and anyone interested in finding out more about the Hub's research (noting that the content may assume some understanding of climate change science and the fields being discussed).